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ABSTRACT

Test presentation mode significantly affected test performance in two randomized groups of college students exposed to audio/visual and visual test modes. A significant difference was found between test presentation mode and mean test scores; the audio/visual test mode was superior to the visual test mode; and the "brighter" students seemed to benefit most from the use of the audio/visual test mode. (RC)

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A COMPARISON OF AN AUDIO/VISUAL TEST MODE WITH A VISUAL TEST MODE AS A DIFFERENTIAL VARIABLE IN TEST PERFORMANCE

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ABSTRACT

The purpose of this study was to determine if test presentation mode is a differential variable in test performance. Two randomized groups of college students enrolled in an Introductory Psychology class were exposed to two different testing modes, i.e., audio/visual and visual. The following conclusions were drawn from the study: (1) A significant difference was found between test presentation mode and mean test scores, (2) The audio/visual test mode was superior to the visual test mode, and (3) The "brighter" students seemed to benefit most from the use of the audio/visual test mode. In sum, it was concluded that the test presentation mode significantly effected test performance.

It might generally be agreed that instructors using multiple-choice tests would like to be assured that student test scores are an accurate reflection of what is being taught; and not due to the interference of extraneous uncontrolled variables, e.g., test presentation mode, test construction, and/or answer sheet formats. While the latter two variables have received extensive study, there seems to be a dearth of information on the influence of test-presentation-mode.

The use of audio/visual testing techniques have been explored by several investigators (Thelen, 1945; Carpenter, et. al, 1954; Tennis, 1968). Results of such investigations were inconclusive as

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to a significant influence of test-mode on test performance. However, in a study by Jester and Travers (1966) concerning the visual, audial and audio/visual modes of learning, it was found that the audio/visual mode was superior to either of the other two. To account for the difference it was assumed that "some people are better able to comprehend material by one or the other...and... that the individual's preferred mode of receiving information would be used in the audio/visual presentation". Certainly, this same reasoning process could be applied to testing procedures.

In sum, it is the purpose of this study to determine if test presentation mode is a variable in test performance. The working hypothesis was: there is a significant difference in the mean test scores that result from the visual or audio/visual test mode.

METHOD

Data were collected from two groups of introductory psychology students enrolled at Lorain County Community College (N_T=30). All student examinees were randomly divided into two groups and instructed that on the day of the test they were to report to two "different" rooms. A masking technique was employed so as each group would not suspect the true purpose of the study. Each examinee was provided with a copy of the printed exam booklet (visual test mode) normally given as an in-class examination of subject mastery. The test presentation mode for the Experimental Group (Group AV) consisted of providing each examinee with an audio tape recording made of the printed test along with a printed copy of the test (audio/visual

test mode). Additionally, each examinee in the AV Group was provided with individual tape players and head phone sets so as to proceed with the audio/visual test at their own pace. The test instructions for both groups were essentially the same, except that the AV Group was additionally informed that they could hear each test question read aloud as they "took" the test.

RESULTS

An F test for homogeneity of variance between groups was performed and no significant difference ($F=1.02$; NS) was found, indicating that the test sample populations were homogeneous.

Table 1 presents frequency distributions, means and standard deviations for the dependent variable of test scores. A t-test applied to the two group means resulted in the rejection of the null hypothesis ($t=2.06$; $P>.05$). As indicated, a superior test performance was obtained by subjects using the audio/visual test presentation mode (Group AV).

In order to determine if significance between overall group means was a function of the "upper" or "lower" one-halves of the two groups test scores, both groups were divided at the median points and separate means were calculated for the respective "upper" and "lower" one-halves of Group V and Group AV (Table 2). A t-test was applied to the means of the top-half of the test scores for both groups. Table 2 indicates that at the .01 level or better ($t=3.64$; $P>.01$) a null hypothesis was rejected and the upper one-half test scores do differ significantly from one another. A t-test was applied to the

TABLE 1

FREQUENCY DISTRIBUTIONS, MEANS AND STANDARD DEVIATIONS OF TEST SCORES FOR GROUP V AND GROUP AV

Test Scores	GROUPS		
	Group V (Visual Mode)	Group AV (Audio/Visual Mode)	
47-48	0	1	
45-46	0	3	
43-44	0	0	
41-42	2	4	
39-40	5	0	
37-38	0	2	
35-36	1	3	
33-34	2	0	
31-32	1	1	
29-30	2	0	
27-28	1	1	
25-26	0	0	
23-24	1	0	
	N=15	N=15	
	X=35.20	X=39.60	t=2.06*
	s=5.69	s=5.71	

df=28 *Significant at the .05 level of confidence.

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR THE "UPPER" AND "LOWER" ONE-HALVES OF TEST SCORES FOR GROUP V AND GROUP AV

Portion of Distribution Test Scores	Group V		Group AV		
	Means	SDs	Means	SDs	
Upper ½	40.57	.98	44.57	2.51	t=3.64**
Lower ½	29.86	3.63	34.43	3.87	t=2.09

df=12 **Significant at the .01 level of confidence.

bottom one-half of the test scores for both groups and a null hypothesis was not rejected at the .05 level of significance (t=2.09; NS).

DISCUSSION

To what extent the higher mean scores on the audio/visual test was due to a more complete presentation of material and to what extent the novel, stimulating, multi-sensory mode of presentation, is not known. However, at the conclusion of the audio/visual test an open-ended "comment" about the test and testing situation was solicited from each examinee. An analysis of these comments revealed that the students generally thought that the audio/visual test mode helped them to do better.

Essentially two reasons were noted by the students as to WHY they thought they were helped by the audio/visual test mode: (1) The easing of tension, and (2) The facility of associating printed words (terms) with words (terms) they may only have been familiar with at an auditory level. The later "insight" is consistent with the proposition that some students have a difficulty in making the transfer between sound to sight and/or vice-versa. And more specifically, it is generally recognized that people, including students, have a greater listening vocabulary than reading vocabulary. Whether or not the above two "insights" offered by students were literally accountable for the significant difference between group test scores or were simply rationalized feelings about the novel testing mode can only be speculated about. It remains for additional

research to determine causal factors.

Additonally, the superiority of the audio/visual test mode could be accounted for by the recognition of individual differences in capacity for handling either the visual or auditory mode of presentation. J. Bissell, et. al. (1971) reported that different people have preferences of one sense modality over another. In other words, certain persons may either be visually oriented or auditorily oriented to sensing their environment. Assuming that comprehension is related to a modality preference, then it is quite likely that the combination audio/visual (multisensory) test mode would "hit" the individual's preferred mode of receiving information. This interpretation is further substantiated by the fact that some examinees reported that they were confused by two sense modes and therefore had had to block out one mode in order to understand the questions. A means of confirming this interpretation could consist of a post-test check of the examinee's sense modality preference.

A review of Table 2 strongly suggests that it was the upper one-half of test scores of the two groups that apparently accounted for the overall significant group mean difference. This implication is consistent with Devine's (1964; 1967) postulations regarding a high correlation between reading and listening skills. According to Devine, "The same higher mental processes underlie both facets of the language arts complex (1967; p. 154). In addition, it should be noted that the results of the split-half mean comparisons may indicate that not all students benefit "equally" from the audio/visual test mode. It may be that disproportionately greater advantage accrues to the already advantaged, "brighter" students?

CONCLUSION

As was indicated, one reason for the initiation of the present study was to explore the potential influence of "extraneous uncontrolled variables"; e.g., test presentation mode; on academic in-class test validity. While additional research is suggested, it may tentatively be concluded that the test presentation mode is indeed such an "extraneous uncontrolled variable", along with the previously confirmed variables of "test construction" and "answer sheet format", effecting multiple-choice test performance. Additionally and as a matter of practical interpretation, the significant difference in test score means provides evidence that the audio/visual test presentation mode has a potential influence on test performance. Beyond the replication studies, or concomitant with, a serious research effort should be directed at discovering the causal factors precipitating the apparent superiority of the audio/visual test mode.

REFERENCES

Bissell, J., White, S. and Zivin, G. Psychology and Educational Practice. Ed. G. Lesser, Illinois: Scott, Foresman and Co. 1971, pp. 130-155.

Carpenter, C. R., Greenhill, L. P., et. al. "The Development of a Sound Motion Picture Proficiency Test", Personnel Psychology, 7(1954), pp. 43-46.

Devine, Thomas G. "Listening". Review of Educational Research, 37, No. 2,(April 1967), pp. 152-157.

Jester, Robert E. and Travers, Robert M. W. "Comprehension of Connected Meaningful Discourse as a Function of Rate and Mode of Presentation", The Journal of Educational Research, 59, No. 7, (March 1966), pp. 297-302.

Thelen, H. A. "Testing by Means of Film-Slides with Synchronized Recorded Sound", Educational and Psychological Measurement, 5(1945), pp. 33-48.

Tennis, M. H. "A Comparison of an Audio-Visual Test with a Written Test", Florida Journal of Educational Research, 12, 1 (January 1970), pp. 109-117.